

**Claim****WHAT IS CLAIMED IS:**

1        1. A multimode filter in an optical storage device for filtering an error signal  
2 and extracting a frequency signal, said multimode filter comprising:

3        a CLV mode filter for filtering said error signal and extracting a narrow  
4 bandwidth signal;

5        a CAV mode filter for filtering said error signal and extracting a wide bandwidth  
6 signal; and

7        a switch for selection of the filter between CLV and CAV mode filter.

1        2. The multimode filter as claimed in claim 1, wherein said CAV mode filter  
2 comprising:

3        a high pass filter for filtering said error signal and generating an intermediate  
4 signal ; and

5        a low pass filter that connects with said high pass filter for receiving and filtering  
6 said intermediate signal from the high pass filter.

1        3. The multimode filter as claimed in claim 2, wherein said high pass filter has a  
2 cutoff frequency of multiple times of 22.05KHz.

1        4. The multimode filter as claimed in claim 2, wherein said low pass filter has a  
2 cutoff frequency of multiple times of 55KHz.

1        5. The multimode filter as claimed in claim 1 , wherein said frequency signal has  
2 a center frequency of multiple times of 22.05KHz.

1        6. The multimode filter as claimed in claim 1 , wherein said error signal is a  
2 tracking error signal.

1        7. The multimode filter as claimed in claim 1, wherein said optical storage device  
2 is selected from the group consisting of CD-R, CD-RW, DVD-R, DVD-RW,  
3 DVD+RW, DVD-RAM.

1        8. An optical storage device having a multimode filter for filtering an error signal  
2 and extracting a frequency signal, said multimode filter comprising:

3        a CLV mode filter for filtering said error signal and extracting a narrow  
4 bandwidth signal;

5        a CAV mode filter for filtering said error signal and extracting a wide bandwidth  
6 signal; and

7 a switch for selection of the filter between CLV and CAV mode filter.

1 9. The multimode filter as claimed in claim 8, wherein said CAV mode filter  
2 comprising:

3 a high pass filter for filtering said error signal and generating an intermediate  
4 signal ; and

5 a low pass filter that connects with said high pass filter for receiving and filtering  
6 said intermediate signal from the high pass filter.

1 10. The multimode filter as claimed in claim 9, wherein said high pass filter has a  
2 cutoff frequency of multiple times of 22.05KHz.

1 11. The multimode filter as claimed in claim 9, wherein said low pass filter has a  
2 cutoff frequency of multiple times of 55KHz.

1 12. The multimode filter as claimed in claim 8 , wherein said frequency signal has  
2 a center frequency of multiple times of 22.05KHz.

1 13. The multimode filter as claimed in claim 8 , wherein said error signal is a  
2 tracking error signal.

1 14. The multimode filter as claimed in claim 8, wherein said optical storage  
2 device is selected from the group consisting of CD-R, CD-RW, DVD-R, DVD-RW,  
3 DVD+RW, DVD-RAM.

1 15. A multimode filtering method for filtering an error signal of an optical storage  
2 device, said multimode filtering method comprising:

3 inputting an error signal to a multimode filter;

4 setting the frequency domain of said multimode filter in accordance with the  
5 recording mode of said optical storage device; and

6 filtering said error signal and extracting a frequency signal.

1 16. The multimode filtering method as claimed in claim 15, wherein said  
2 multimode filter comprises a CLV and CAV mode filter.

1 17. The multimode filtering method as claimed in claim 16 , wherein said CLV  
2 mode filter has a center frequency of multiple times of 22.05KHz, and the CAV  
3 mode filter has cutoff frequencies of multiple times of 22.05KHz and 55KHz.

1 18. The multimode filtering method as claimed in claim 15, wherein said  
2 frequency signal has a center frequency of multiple times of 22.05KHz.

1 19. The multimode filter as claimed in claim 15 , wherein said error signal is a  
2 tracking error signal.

- 1      20. The multimode filter as claimed in claim 15, wherein said optical storage
- 2      device is selected from the group consisting of CD-R, CD-RW, DVD-R, DVD-RW,
- 3      DVD+RW, DVD-RAM.